

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a major, industrial permit. The discharge results from the operation of a 0.20 MGD wastewater treatment plant at Outfall 001 and a 0.07 MGD reverse osmosis potable water treatment plant at Outfall 002. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Coffeewood Correctional Center
12352 Coffeewood Drive
Mitchels, VA 22709
SIC Code: 4952 WWTP
4941 WTP
Facility Location: 12352 Coffeewood Drive
Mitchels, VA 22709
County: Culpeper
Facility Contact Name: Robert Leake
Water Systems Supervisor
Telephone Number: 540-829-6483
2. Permit No.: VA0087718
Current Expiration Date: 5 August 2008
Other VPDES Permits: Not Applicable
Other Permits: PWSID 6047016 – Public Water Supply (VDH)
E2/E3/E4 Status: Not Applicable
3. Owner Name: Virginia Department of Corrections
Owner Contact/Title: Timothy Newton
Director, Environmental Services Unit
Telephone Number: 804-674-3000
4. Application Complete Date: 5 March 2008
Permit Drafted By: Douglas Frasier
Date Drafted: 5 June 2008
Draft Permit Reviewed By: Alison Thompson
Date Reviewed: 7 July 2008
Public Comment Period: Start Date: 14 August 2008
End Date: 15 September 2008
5. Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination
Receiving Stream Name: Cabin Branch
Drainage Area at Outfall: 3.49 square miles
River Mile: 1.54
Stream Basin: Rappahannock River
Subbasin: None
Section: 4
Stream Class: III
Special Standards: None
Waterbody ID: VAN-E16R
7Q10 Low Flow: 0.0 MGD
7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD
30Q5 Flow: 0.0 MGD
303(d) Listed: No
30Q10 Flow: 0.0 MGD
TMDL Approved: Downstream – Rapidan River Basin
Date TMDL Approved: 5 December 2007
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<u>✓</u> State Water Control Law <u>✓</u> Clean Water Act <u>✓</u> VPDES Permit Regulation <u>✓</u> EPA NPDES Regulation	<u> </u> EPA Guidelines <u>✓</u> Water Quality Standards <u> </u> Other
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7. Licensed Operator Requirements: Class II
8. Reliability Class: Class I

9. Permit Characterization:

<input type="checkbox"/> Private	<input checked="" type="checkbox"/>	Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/>	Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input checked="" type="checkbox"/> State	<input checked="" type="checkbox"/>	Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input type="checkbox"/> POTW	<input type="checkbox"/>	Pretreatment Program Required	<input checked="" type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> TMDL	<input type="checkbox"/>		

10. Wastewater Sources and Treatment Description:*Wastewater Treatment Plant*

The Coffeewood Correctional Center STP is a 0.2 MGD Sequential Batch Reactor (SBR) treatment plant serving approximately 1,800 inmates and a population of about 50 from the Mitchels area.

Influent from the correctional center and residential homes flow via gravity to the treatment plant. Sewage travels through the preliminary treatment consisting of a mechanical bar rake and grit removal. After screening, wastewater is pumped to one of two sequencing batch reactor (SBR) units. Within the SBR unit, wastewater is mixed with sludge, aerated, settled and decanted for a pre-determined cycle of time. Effluent leaving the SBR unit flows to the filter feed well then to the sand filters. Disinfection is accomplished via UV units. The effluent is reaerated prior to final discharge.

Water Treatment Plant

The discharge from Outfall 002 results from the operation of a reverse osmosis potable water treatment system. Groundwater is filtered through a permeable membrane and results in approximately 70,000 gallons per day of reject water, which is discharged from the system without additional treatment. Chlorination of the potable water occurs after treatment. There is no potential for chlorine to be found in the reject stream that is discharged.

See **Attachment 2** for the NPDES Permit Rating Worksheet.

See **Attachment 3** for facility schematics/diagrams.

TABLE 1
OUTFALL DESCRIPTION

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.2 MGD	38° 21' 53" N 78° 01' 36" W
002	Industrial Wastewater	See Item 10 above.	0.07 MGD (Maximum 30-day flow)	38° 21' 53" N 78° 01' 36" W

See **Attachment 4** for topographic map.

11. Sludge Treatment and Disposal Methods:

Sludge is treated through aerobic digestion, de-watered using a plate filter press and land filled at the Battle Creek Landfill in Luray, Virginia according to the permit application. The facility generates approximately 75 dry metric tons of sludge per year.

12. Discharges, Intakes, Monitoring Stations & Other Items in Vicinity of Discharge:

TABLE 2 DISCHARGES, INTAKES & MONITORING STATIONS		
Identification Number	Description	Latitude / Longitude
VAG406305	John C. Price Residence Single Family Home Domestic Discharge	38° 21' 55" / 78° 02' 01"
VAG840109	Cedar Mountain Stone Corporation Nonmetallic Mineral Mining Permit	38° 21' 37" / 78° 02' 04"
VA0087718	Coffewood Correctional Center Domestic & Industrial Discharge	38° 21' 53" / 78° 01' 36"
3-CED000.59	DEQ Ambient Monitoring Station Cedar Run at the State Route 522 Bridge	38° 21' 49" / 77° 58' 33"

13. Material Storage:

TABLE 3 MATERIAL STORAGE		
Materials Description	Maximum Amount Stored	Spill/Stormwater Prevention Measures
VITEC 3000 Antiscalent (polymer)	110 gallons	All chemicals are stored inside the water treatment plant except the hydrated lime which is stored in a 10' x 10' outbuilding.
Sodium sulfite	100 pounds	
Calcium hypochlorite	500 pounds	
Ferric chloride	15 gallons	
Muriatic acid	15 gallons	
Sodium hypochlorite	165 gallons	
AQUAFEED 1025 Antiscalent (polymer)	110 gallons	
Citric acid	200 pounds	
NALCO 9909 dry polymer	200 pounds	
Hydrated lime	2000 pounds	
Alum (powered)	250 pounds	

- 14. Site Inspection:** Performed by NRO staff on 22 August 2007. See **Attachment 5** for the inspection summary. The entire report is included in the permit file.

15. Receiving Stream Water Quality and Water Quality Standards:a). Ambient Water Quality Data

There is no DEQ ambient monitoring data available for the receiving stream. The nearest monitoring station, 3-CED000.59, is located at the Route 522 bridge crossing of Cedar Run, approximately 4.06 rivermiles downstream of the Outfalls.

There are downstream impairments for bacteria. The EPA approved the Rapidan River Bacteria TMDL on 5 December 2007. While the receiving stream was not included in the TMDL since it was not listed as impaired, all upstream facilities were considered. This facility was given a bacteria Wasteload Allocation (WLA) of 3.48×10^{11} cfu/year for *E. coli*.

b). Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260 (360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Cabin Branch is located within Section 4 of the Rappahannock River Basin and classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 6 details other water quality criteria applicable to the receiving stream.

Ammonia:

The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality standard. See **Attachment 7** for the derivation of the 90th percentile value of the effluent pH. Since temperature values were not available, staff used the default value of 25° C.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). However, the 7Q10 of the receiving stream is zero and no ambient data is available. Normally staff would then utilize effluent hardness data to determine the metals criteria. The previous reissuances noted that the effluent hardness data should not be used since chemical addition for nitrification yielded artificially high hardness values.

It is staff's best professional judgement that these conditions still hold true; therefore, the available ambient data from the monitoring station at the Route 522 bridge on Cedar Run was used to establish the criteria. The average hardness of the receiving stream is 88.4 mg/L.

Bacteria Criteria:

The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

E. coli bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 ml)	126	235

¹For two or more samples taken during any calendar month.

c). Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Cabin Branch, is located within Section 4 of the Rappahannock River Basin. This section has not been designated with a special standard.

d). Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: The Upland Sandpiper (song bird), Loggerhead Shrike (song bird), Bald Eagle and the Migrant Loggerhead Shrike (song bird). The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the 7Q10 and 1Q10 critical flows of 0.0 MGD. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA s) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a). Effluent Screening

Effluent data obtained from the DMRs have been reviewed and determined to be suitable for evaluation. A summary of the effluent data is available in the reissuance file.

b). Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow
	=	(1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 and Outfall 002 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c). Effluent Limitations Toxic Pollutants, Outfall 001

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

The facility currently has a year round TKN limit of 3.0 mg/L. A review of the DMR data indicates that the facility is consistently reporting sample results below this limit. Therefore, it is staff's best professional judgement that the TKN limit of 3.0 mg/L continue with this reissuance. A limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when the 3.0 mg/L TKN limit is met. The weekly average limit will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average.

2) Metals:

Limit determinations were completed for Copper and Zinc. See **Attachment 8** for the derivation of the limits for the current and previous reissuances. The new data indicated that the Copper limit would be relaxed slightly and that there was no limit required for Zinc. However, due to antibacksliding provisions the current metal limits for Copper and Zinc will be carried forward with this reissuance.

3) Organics:

During the last reissuance, bis (2-Ethylhexyl) Phthalate was found to be present in the effluent and a limit may be required. Staff concluded that the results may have been due to contamination from the sampling apparatus containing plastic or rubber compounds and that monitoring was warranted. Quarterly monitoring indicated that the compound was not present in the discharge; subsequently, it is proposed that the monitoring requirement be removed.

d). Effluent Limitations Toxic Pollutants, Outfall 002

1) Metals:

Limit determinations were completed for Copper and Zinc. See **Attachment 9** for the derivation of the limits. Based on the available data, it is staff's best professional judgement that the current Copper and Zinc monitoring requirements be removed with this reissuance. This type of action is within antibacksliding provisions.

2) Organics:

During the last reissuance, bis (2-Ethylhexyl) Phthalate was found to be present in the effluent and a limit may be required. However, staff believed that a limit was not justified at that time, concluding that the analytical results may have been due to contamination from the sampling apparatus containing plastic or rubber compounds. Quarterly monitoring was required to gather data in order to determine if a limit was warranted.

DMR data indicates that all of the sampling events for bis (2-Ethylhexyl) Phthalate were less than the 'QL'; therefore, it is staff's best professional judgement that no limits be imposed and the monitoring requirements removed with this reissuance.

3) WET Limit:

A Chronic Whole Effluent Toxicity (WET) limit of 1.8 TU_c was calculated during the 1998 reissuance based on reported results of effluent toxicity testing. The limit became effective on 25 November 1999. A WET limit of 1.44 TU_c is proposed with this reissuance. This limit is based on calculations using current agency guidelines which take into account dilution, probability and effluent variability to derive the limitation.

e). Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to Dissolved Oxygen (D.O.), carbonaceous Biochemical Oxygen Demand-5 day (cBOD₅), Total Suspended Solids (TSS) and pH limitations are proposed.

It is staff's practice to equate the TSS limits with the cBOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9 VAC25-260-170.

f). Effluent Limitations and Monitoring, Outfall 002 – Conventional and Non-Conventional Pollutants

No changes to Dissolved Oxygen (D.O.) and pH limitations are proposed.

The previous permit reissuance established a limitation for Total Suspended Solids (TSS) for the reverse osmosis treatment facility based on best professional judgement. However, given that the current VPDES Permit Manual states that reverse osmosis treatment plants should not monitor for TSS and all reported TSS data during the last permit term were less than the 'QL', it is staff's best professional judgement at this time that the TSS limits be removed with this reissuance. This action is within the antibacksliding provisions as set forth in 9 VAC 25-31-220.L and agency guidance.

The Total Dissolved Solids (TDS) limitation was based on data and demonstrations provided by the Department of Corrections. It was shown that precipitation of the dissolved solids is unlikely and that the elevated levels of dissolved solids would not affect the palatability of the receiving stream for downstream livestock. There are no Water Quality Standards for aquatic life. See **Attachment 10** for 1974 National Academy of Sciences publication excerpt regarding livestock use.

pH limitations are set at the water quality criteria.

g). Effluent Limitations and Monitoring Summary

The effluent limitations are presented in the following tables. Limits were established for cBOD₅, Total Suspended Solids, TKN, pH, Dissolved Oxygen and *E. coli* for Outfall 001 and limits were established for Total Dissolved Solids, pH and Dissolved Oxygen for Outfall 002.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

The permittee requested a reduction in the Sample Frequency for TKN at Outfall 001. The facility has not experienced any violations in the last three (3) years in regards to TKN. Staff concurs with this request; however, if a violation should occur during the permit term, the permittee will be required to sample at the frequency of 3D/W until the permit expiration date.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

The backsliding proposed with this reissuance conforms to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, 9 VAC 25-31-220.L., and 40 § CFR 122.44.

19a. Effluent Limitations/Monitoring Requirements: Outfall 001 – Wastewater Treatment Plant

Design flow is 0.2 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	Continuous	TIRE
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/D	Grab
cBOD ₅	2,3	10 mg/L 7.6 kg/day	15 mg/L 11 kg/day	N/A	N/A	3D/W	8H-C
Total Suspended Solids (TSS)	2	10 mg/L 7.6 kg/day	15 mg/L 11 kg/day	N/A	N/A	3D/W	8H-C
DO	3,4	N/A	N/A	6.0 mg/L	N/A	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	4	3.0 mg/L 2.3 kg/day	4.5 mg/L 3.4 kg/day	N/A	N/A	1/W*	8H-C
<i>E. coli</i> (Geometric Mean)	3,5	126 n/100mL	N/A	N/A	N/A	1/W	Grab
Copper, Total Recoverable	3	12 µg/L	12 µg/L	N/A	N/A	1/M	Grab
Zinc, Total Recoverable	3	79 µg/L	79 µg/L	N/A	N/A	1/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. Regional Stream Model (**Attachment 11**)
5. Rapidan River Basin TMDL

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

3D/W = Three days a week.

1/W = Once every week.

1/M = Once every month.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*The permittee requested and was granted a reduced monitoring frequency based on demonstrated compliance. Should the permittee be issued a Warning Letter, a Notice of Violation or be subject to an active enforcement action related to effluent limitation violations, monitoring frequency shall revert to 3D/W upon issuance of the letter, notice or initiation of the enforcement action and shall remain in effect until the permit's expiration date.

19b. Effluent Limitations/Monitoring Requirements: Outfall 002 – Potable Water Treatment Plant

Design flow is 0.07 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD)	NA	NL	N/A	N/A	NL	1/M	Estimate
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
Total Dissolved Solids (TDS)	2,4	N/A	N/A	N/A	5000 mg/L 1300 kg/d	1/M	5G/8H-C
Chronic Toxicity – <i>C. dubia</i>		N/A	N/A	N/A	1.44 TU _c	1/Y	5G/8H-C

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. 1974 National Academy of Science (**Attachment 10**)

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

1/D = Once every day.

1/M = Once every month.

1/Y = Once every year.

5G/8H-C = A composite sample consisting of a minimum of five (5) grab samples collected at hourly intervals until the discharge ceases or if the discharge is less than eight (8) hours in duration, a minimum of five (5) grab samples collected at evenly spaced intervals during the duration of the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Based on the technical evaluation of sources contributing to the discharge.

20. Other Permit Requirements:

- a). Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

- b). Permit Section Part I.D., details the requirements for Toxics Management Program

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC and receiving stream characteristics. (See **Attachment 12** for limitation derivation for Outfall 002).

21. Other Special Conditions:

- a). 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b). Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c). O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Before or on 15 December 2008, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d). CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e). Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class II operator.
- f). Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet a reliability Class I.
- g). Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- h). Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Biosolids Use Regulations, 12 VAC 5-585-10 et seq. The facility includes a treatment works treating domestic sewage.
- i). Materials Handling/Storage. 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste.

- j). Notification Levels. The permittee shall notify the Department as soon as they know or have reason to believe:
- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
 - (1) One hundred micrograms per liter;
 - (2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;
 - (3) Five times the maximum concentration value reported for that pollutant in the permit application; or
 - (4) The level established by the Board.
 - b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
 - (1) Five hundred micrograms per liter;
 - (2) One milligram per liter for antimony;
 - (3) Ten times the maximum concentration value reported for that pollutant in the permit application; or
 - (4) The level established by the Board.
22. Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a). Special Conditions:
- The Water Quality Criteria Reopener special condition was removed with this reissuance.
 - Monitoring for bis (2-Ethylhexyl) Phthalate was removed with this reissuance.
 - The following special conditions were included in this reissuance:
 - Indirect Dischargers;
 - CTC, CTO Requirement;
 - Notification Levels; and
 - Material Handling/Storage.

- b). Monitoring and Effluent Limitations:

Outfall 001

- The sample frequency for TKN was reduced from 3D/W to 1/W based on the permittee's request, performance for the last three years and per agency guidance.
- A weekly maximum of 4.5 mg/L for TKN was included with this reissuance based on agency guidance.

Outfall 002

- Total Suspended Solids limits were removed per agency guidance and best professional judgement with this reissuance.
- Monitoring requirements for Dissolved Copper, Dissolved Zinc, Total Recoverable Copper and Total Recoverable Zinc were removed with this reissuance.
- Monitoring for bis (2-Ethylhexyl) Phthalate was removed with this reissuance.
- The Whole Effluent Toxicity limit was reduced from 1.8 TU_c to 1.44 TU_c. This new limit is based upon current agency guidelines and derivation methods.

The coordinates were updated with this reissuance.

- 24. Variances/Alternate Limits or Conditions:** The sample frequency for TKN was reduced from 3D/W to 1/W based on the permittee's request, performance for the last three years and per agency guidance.

25. Public Notice Information:

First Public Notice Date: 13 August 2008 Second Public Notice Date: 20 August 2008

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: Northern DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3873, ddfrasier@deq.virginia.gov. See **Attachment 13** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

Downstream impairments due to bacteria necessitated the development of the Rapidan River Basin Bacteria TMDL; approved by the EPA on 5 December 2007. Even though the receiving stream was not listed as impaired and was not included in the TMDL, all upstream sources were included. This facility was given a Wasteload Allocation (WLA) of 3.48×10^{11} cfu/year for *E. coli*. The proposed bacteria limitations presented within are in compliance with the TMDL and should not contribute to the downstream impairment.

TMDL Reopener: This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action(s): On 19 June 2002, the DEQ and the Department of Corrections entered an Executive Compliance Agreement (Amendment). This agreement provided a Schedule of Compliance for the facility in order to achieve permitted limits for Outfall 001 and Outfall 002. The permittee was granted interim limits for Copper and Zinc for Outfall 001 and a WET limit for Outfall 002 until such time compliance is achieved. As of the date of this Fact Sheet, an agreement between the DOC and the County of Culpeper was being drafted in order to provide public water to the correctional center; thus, eliminating the discharge from Outfall 002.

See **Attachment 14** for a copy of the Executive Compliance Agreement.

Staff Comments: None.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in **Attachment 15**.

Fact Sheet Attachments – Table of Contents

Coffeewood Correctional Center VA0087718 2008 Reissuance

Attachment 1	Flow Frequency Determination
Attachment 2	NPDES Permit Rating Worksheet
Attachment 3	Facility Schematics/Diagrams
Attachment 4	Topographic Map
Attachment 5	Inspection Summary Report
Attachment 6	Virginia Water Quality Criteria
Attachment 7	Effluent pH Data
Attachment 8	Copper and Zinc Limit Derivations for Outfall 001
Attachment 9	Copper and Zinc Limit Derivations for Outfall 002
Attachment 10	1974 National Academy of Sciences publication
Attachment 11	Regional Stream Model (23 April 1993)
Attachment 12	Whole Effluent Toxicity (WET) Limit Determination
Attachment 13	Public Notice
Attachment 14	Executive Compliance Agreement (Amendment)
Attachment 15	EPA Checklist

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Coffeewood Correctional Center - #VA0087718

TO: James Olson, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: December 12, 1997

COPIES: Ron Gregory, Charles Martin, File

This memo supercedes Ed Morrow's memo to Jennie Dollard dated August 5, 1992 concerning the subject facility.

The Coffeewood Correctional Center discharges to the Cabin Branch near Culpeper, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

The USGS conducted several flow measurements on the Cedar Run from 1951 to 1954 and from 1979 to 1981. The measurements were made at the Route 522 bridge near Culpeper, VA. The low flow/base flow measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Mountain Run near Culpeper, VA #01665000. The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

Mountain Run near Culpeper, VA (#01665000):

Drainage Area = 15.9 mi²
1Q10 = 0.45 cfs High Flow 1Q10 = 2.8 cfs
7Q10 = 0.60 cfs High Flow 7Q10 = 3.7 cfs
30Q5 = 1.5 cfs HM = 5.4 cfs

Cedar Run at Rt 522 near Culpeper, VA (#01667650):

Drainage Area = 28.07 mi²
1Q10 = 0.0 cfs High Flow 1Q10 = 0.12 cfs
7Q10 = 0.0 cfs High Flow 7Q10 = 0.24 cfs

30Q5 = 0.0 cfs

HM = 0.0 cfs

Cabin Branch at discharge point:

Drainage Area = 3.49 mi²

1Q10 = 0.0 cfs

High Flow 1Q10 = 0.015 cfs

7Q10 = 0.0 cfs

High Flow 7Q10 = 0.030 cfs

30Q5 = 0.0 cfs

HM = 0.0 cfs

The high flow months are December through April.

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the Cabin Branch upstream of the discharge point.

If there are any questions concerning this analysis, please let me know.

Conversion of CFS to MGD using the conversion factor 0.6463

High Flow 1Q10 = 0.015 cfs x 0.6463 = 0.0096945 MGD

High Flow 7Q10 = 0.030 cfs x 0.6463 = 0.019389 MGD

NPDES PERMIT RATING WORK SHEET

<input checked="" type="checkbox"/>	Regular Addition
<input type="checkbox"/>	Discretionary Addition
<input type="checkbox"/>	Score change, but no status Change
<input type="checkbox"/>	Deletion

VPDES NO. : VA0087718Facility Name: Coffeewood Correctional CenterCity / County: Mitchels / Culpeper CountyReceiving Water: Cabin Branch

Reach Number: _____

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- ☐ YES; score is 700 (stop here)
- ☒ NO; (continue)

☐ Yes; score is 600 (stop here) ☒ NO; (continue)

FACTOR 1: Toxic Pollutant PotentialPCS SIC Code: _____ Primary Sic Code: 4941 Other Sic Codes: _____Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input checked="" type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input checked="" type="checkbox"/> 7.	7	35
<input type="checkbox"/> 1.	1	5	<input type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: 7**Total Points Factor 1:** 35**FACTOR 2: Flow/Stream Flow Volume** (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II: Flow < 1 MGD	<input checked="" type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III: Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
Type I/III:	< 10 %	<input type="checkbox"/> 41	0
	10 % to < 50 %	<input type="checkbox"/> 42	10
	> 50%	<input type="checkbox"/> 43	20
Type II:	< 10 %	<input type="checkbox"/> 51	0
	10 % to < 50 %	<input type="checkbox"/> 52	20
	> 50 %	<input type="checkbox"/> 53	30

Code Checked from Section A or B: 21**Total Points Factor 2:** 10

NPDES PERMIT RATING WORK SHEET**FACTOR 3: Conventional Pollutants**

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)

	Code	Points
<input type="checkbox"/> < 100 lbs/day	1	0
<input type="checkbox"/> 100 to 1000 lbs/day	2	5
<input type="checkbox"/> > 1000 to 3000 lbs/day	3	15
<input type="checkbox"/> > 3000 lbs/day	4	20

Code Number Checked: N/A**Points Scored:** 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)

	Code	Points
<input checked="" type="checkbox"/> < 100 lbs/day	1	0
<input type="checkbox"/> 100 to 1000 lbs/day	2	5
<input type="checkbox"/> > 1000 to 5000 lbs/day	3	15
<input type="checkbox"/> > 5000 lbs/day	4	20

Code Number Checked: 1**Points Scored:** 0C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one)

	Code	Points
<input type="checkbox"/> < 300 lbs/day	1	0
<input type="checkbox"/> 300 to 1000 lbs/day	2	5
<input type="checkbox"/> > 1000 to 3000 lbs/day	3	15
<input type="checkbox"/> > 3000 lbs/day	4	20

Code Number Checked: N/A**Points Scored:** 0**Total Points Factor 3:** 0**FACTOR 4: Public Health Impact**

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☒ YES; (If yes, check toxicity potential number below)☐ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input checked="" type="checkbox"/> 7.	7	15
<input type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10	<input type="checkbox"/> 10.	10	30

Code Number Checked: 7**Total Points Factor 4:** 15

NPDES PERMIT RATING WORK SHEET**FACTOR 5: Water Quality Factors**

Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been assigned to the discharge

	Code	Points
<input checked="" type="checkbox"/> YES	1	10
<input type="checkbox"/> NO	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

	Code	Points
<input checked="" type="checkbox"/> YES	1	0
<input type="checkbox"/> NO	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

	Code	Points
<input checked="" type="checkbox"/> YES	1	10
<input type="checkbox"/> NO	2	0

Code Number Checked: A 1 B 1 C 2
Points Factor 5: A 10 + B 0 + C 10 = 20

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 21

Check appropriate facility HPRI code (from PCS):

Enter the multiplication factor that corresponds to the flow code: _____

HPRI#	Code	HPRI Score	Flow Code	Multiplication Factor
<input type="checkbox"/> 1	1	20	11, 31, or 41	0.00
<input type="checkbox"/> 2	2	0	12, 32, or 42	0.05
<input type="checkbox"/> 3	3	30	13, 33, or 43	0.10
<input type="checkbox"/> 4	4	0	14 or 34	0.15
<input checked="" type="checkbox"/> 5	5	20	21 or 51	0.10
			22 or 52	0.30
			23 or 53	0.60
			24	1.00

HPRI code checked : 4

Base Score (HPRI Score): 0 X (Multiplication Factor) 0.10 = 0

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

Code	Points
<input type="checkbox"/> 1	10
<input checked="" type="checkbox"/> 2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

Code	Points
<input type="checkbox"/> 1	10
<input checked="" type="checkbox"/> 2	0

Code Number Checked: A 4 B 2 C 2
Points Factor 6: A 0 + B 0 + C 0 = 0

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

<u>Factor</u>	<u>Description</u>	<u>Total Points</u>
1	Toxic Pollutant Potential	35
2	Flows / Streamflow Volume	10
3	Conventional Pollutants	0
4	Public Health Impacts	15
5	Water Quality Factors	20
6	Proximity to Near Coastal Waters	0
TOTAL (Factors 1 through 6)		80

S1. Is the total score equal to or greater than 80 ☒ YES; (Facility is a Major) ☐ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☐ NO

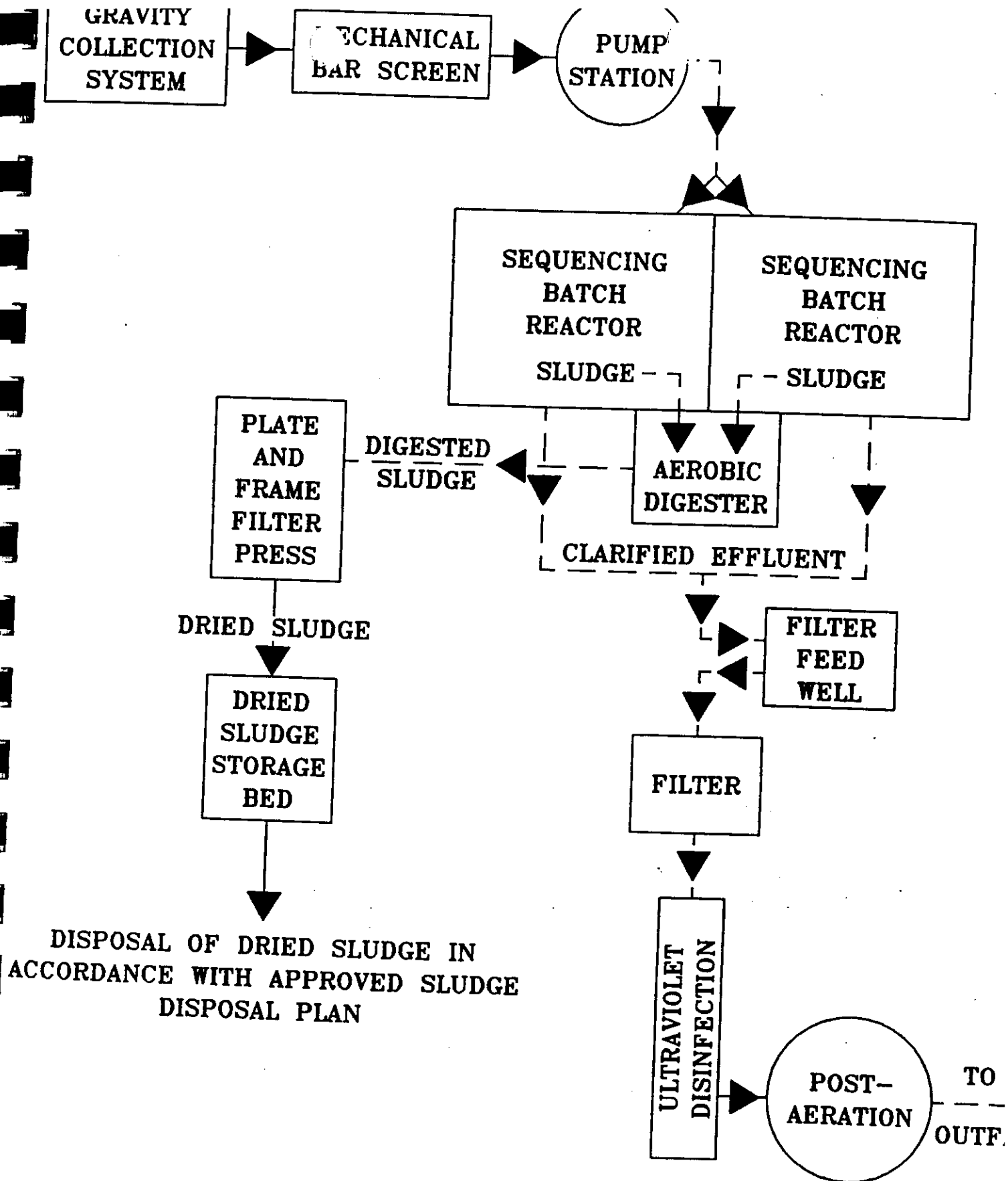
☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

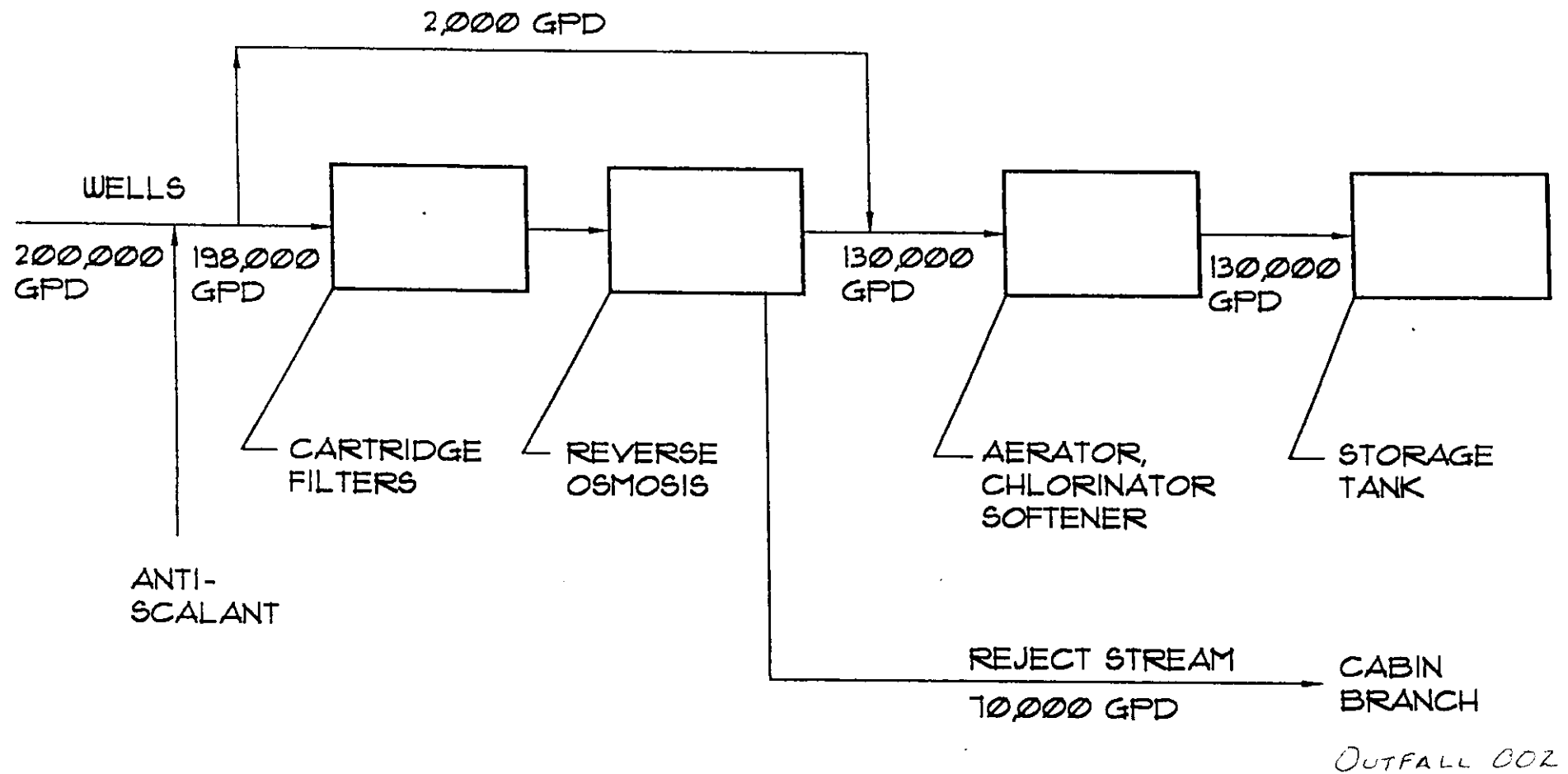
NEW SCORE : 80

OLD SCORE : 80

Permit Reviewer's Name : Douglas Frasier
Phone Number: (703) 583-3873
Date: 14 May 2008



WASTEWATER TREATMENT PLANT
FLOW SCHEMATIC



FACILITY INSPECTION REPORT SUMMARY

Problems identified at last inspection on November 3, 2005

No problems identified.

- 1. Plans for combining Outfalls 001 and 002 and extending the final effluent pipeline to the Rapidan River are no longer active. The adjoining property owner who needs to grant right-of-way for the pipeline denied the DOC access to his property.**
 - 2. Discussions are ongoing between the DOC and the Town of Culpeper regarding the Town providing the DOC facility with drinking water.**
 - 3. Mr. Leake and his staff are to be commended for continuing to operate and maintain the facility with such a high degree of success. Their collective efforts are evident throughout the plant and lab.**
-

Comments regarding the current inspection are as follows:

No problems, deficiencies or issues identified.

- 1. The previous plans for combining Outfalls 001 and 002 and extending the final effluent pipeline to the Rapidan River are no longer viable as the adjoining property owner who needs to grant right-of-way for the pipeline denied the DOC access to his property.**
- 2. Culpeper County is currently working on a draft agreement between DOC and the Culpeper County that would have the County providing drinking water services. DOC was hoping to have the draft agreement to them sometime near the first of October. Once the agreement is executed, the project (installing water lines to the facility) could start construction.**
- 3. Mr. Leake and his staff are to be commended for continuing to operate and maintain the facility with such a high degree of success. Their collective efforts are evident throughout the plant and lab.**

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **DOC - Coffeewood Correctional Center**

Permit No.: **VA0087718**

Receiving Stream: **Cabin Branch**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	88.4 mg/L
90% Temperature (Annual) =	22.3 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	7.7 SU
10% Maximum pH =	SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season) =	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD
Annual Average =	0 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	88.4 mg/L
90% Temp (Annual) =	25 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	7.7 SU
10% Maximum pH =	SU
Discharge Flow =	0.2 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile ^C	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin ^C	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	1.44E+01	1.82E+00	na	--	1.4E+01	1.8E+00	na	--	--	--	--	--	--	--	--	--	1.4E+01	1.8E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.44E+01	3.58E+00	na	--	1.4E+01	3.6E+00	na	--	--	--	--	--	--	--	--	--	1.4E+01	3.6E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^C	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine ^C	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform ^C	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	3.4E+00	1.0E+00	na	--	3.4E+00	1.0E+00	na	--	--	--	--	--	--	--	--	--	3.4E+00	1.0E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane ^C	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform ^C	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	5.2E+02	6.7E+01	na	--	5.2E+02	6.7E+01	na	--	--	--	--	--	--	--	--	--	5.2E+02	6.7E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	1.2E+01	8.1E+00	na	--	1.2E+01	8.1E+00	na	--	--	--	--	--	--	--	--	--	1.2E+01	8.1E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD ^C	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE ^C	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT ^C	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) ^C	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane ^C	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane ^C	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate ^C	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene ^C	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8- tetrachlorodibenzo-p- dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine ^C	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene ^C	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene ^C	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane ^C	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.0E+02	1.2E+01	na	--	1.0E+02	1.2E+01	na	--	--	--	--	--	--	--	--	--	1.0E+02	1.2E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	1.6E+02	1.8E+01	na	4.6E+03	1.6E+02	1.8E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.6E+02	1.8E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine ^C	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total ^C	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Strontium-90	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Tritium	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Selenium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Sulfate	0	2.8E+00	--	na	--	2.8E+00	--	na	--	--	--	--	--	--	--	--	--	2.8E+00	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tetrachloroethylene ^C	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Thallium	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Toluene	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Total dissolved solids	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Toxaphene ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tributyltin	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
1,2,4-Trichlorobenzene	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,1,2-Trichloroethane ^C	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
Trichloroethylene ^C	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
Vinyl Chloride ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Zinc	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
	0	1.1E+02	1.1E+02	na	6.9E+04	1.1E+02	1.1E+02	na	6.9E+04	--	--	--	--	--	--	--	--	1.1E+02	1.1E+02	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	6.2E-01
Chromium III	4.0E+01
Chromium VI	6.4E+00
Copper	4.8E+00
Iron	na
Lead	6.9E+00
Manganese	na
Mercury	5.1E-02
Nickel	1.1E+01
Selenium	3.0E+00
Silver	1.1E+00
Zinc	4.2E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

DOC - Coffewood Correctional Center
VA0087718 Outfall 001

DATE	pH
14-Oct-2003	7.5
12-Nov-2003	7.7
11-Dec-2003	7.6
12-Jan-2004	7.6
12-Feb-2004	7.7
10-Mar-2004	7.9
13-Apr-2004	7.6
11-May-2004	7.7
14-Jun-2004	7.5
12-Jul-2004	7.7
11-Aug-2004	7.7
13-Sep-2004	7.7
12-Oct-2004	7.7
12-Nov-2004	7.9
10-Dec-2004	7.9
11-Jan-2005	7.5
08-Feb-2005	7.5
11-Mar-2005	7.8
11-Apr-2005	7.6
12-May-2005	7.5
13-Jun-2005	7.7
11-Jul-2005	7.5
10-Aug-2005	7.7
12-Sep-2005	7.6
11-Oct-2005	7.7
14-Nov-2005	7.7
12-Dec-2005	7.5
11-Jan-2006	7.6
10-Feb-2006	7.7
10-Mar-2006	7.4
11-Apr-2006	7.3
11-May-2006	7.7
12-Jun-2006	7.5
11-Jul-2006	7.4
11-Aug-2006	7.5
11-Sep-2006	7.6
11-Oct-2006	7.5
13-Nov-2006	7.3
11-Dec-2006	7.4
11-Jan-2007	7.5
12-Feb-2007	7.4
12-Mar-2007	7.3
11-Apr-2007	7.4
14-May-2007	7.4
11-Jun-2007	7.4
11-Jul-2007	7.6
13-Aug-2007	7.4
10-Sep-2007	7.7
10-Oct-2007	7.4
13-Nov-2007	7.7
11-Dec-2007	7.4
11-Jan-2008	7.3
11-Feb-2008	7.4
09-Apr-2008	7.5

DATE	Hardness
08-Aug-2000	284
12-Sep-2000	245
11-Oct-2000	269
09-Nov-2000	264
11-Dec-2000	252
11-Jan-2001	253
12-Feb-2001	305
12-Mar-2001	254
10-Apr-2001	259
10-May-2001	240
11-Jun-2001	246
09-Jul-2001	228
13-Aug-2001	242

Mean	238
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90th Percentile	7.7
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DOC - Coffewood Correctional Center
VA0087718 Outfall 002

DATE	pH
14-Oct-2003	7.6
12-Nov-2003	7.5
11-Dec-2003	7.6
12-Jan-2004	7.5
12-Feb-2004	7.6
10-Mar-2004	7.6
13-Apr-2004	7.6
11-May-2004	7.4
14-Jun-2004	7.6
12-Jul-2004	7.6
11-Aug-2004	7.6
13-Sep-2004	7.7
12-Oct-2004	7.6
12-Nov-2004	7.7
10-Dec-2004	7.8
11-Jan-2005	7.7
08-Feb-2005	7.6
11-Mar-2005	7.6
11-Apr-2005	7.6
12-May-2005	7.7
13-Jun-2005	7.7
11-Jul-2005	7.7
10-Aug-2005	7.5
12-Sep-2005	7.7
11-Oct-2005	7.7
14-Nov-2005	7.7
12-Dec-2005	7.6
11-Jan-2006	7.6
10-Feb-2006	7.5
10-Mar-2006	7.6
11-Apr-2006	7.4
11-May-2006	7.5
12-Jun-2006	7.6
11-Jul-2006	7.5
11-Aug-2006	7.6
11-Sep-2006	7.5
11-Oct-2006	7.6
13-Nov-2006	7.5
11-Dec-2006	7.5
11-Jan-2007	7.6
12-Feb-2007	7.6
12-Mar-2007	7.5
11-Apr-2007	7.6
14-May-2007	7.6
11-Jun-2007	7.6
11-Jul-2007	7.5
13-Aug-2007	7.5
10-Sep-2007	7.5
10-Oct-2007	7.6
13-Nov-2007	7.6
11-Dec-2007	7.6
11-Jan-2008	7.5
11-Feb-2008	7.6
	7.7
	90th Percentile

6/4/2008 11:46:07 AM

Facility = Coffeewood Correctional Center @ Outfall 001

Chemical = Copper

Chronic averaging period = 4

WLAa = 12

WLAc = 8.1

Q.L. = 4

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 8

Expected Value = 10.25

Variance = 37.8225

C.V. = 0.6

97th percentile daily values = 24.9425

97th percentile 4 day average = 17.0538

97th percentile 30 day average = 12.3620

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 11.8468557508312

Average Weekly limit = 11.8468557508312

Average Monthly Limit = 11.8468557508312

The data are:

13

14

8

7

14

12

7

7

6/4/2008 11:45:31 AM

Facility = Coffeewood Correctional Center @ Outfall 001

Chemical = Zinc

Chronic averaging period = 4

WLAa = 110

WLAc = 110

Q.L. = 30

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 5

Expected Value = 38

Variance = 519.84

C.V. = 0.6

97th percentile daily values = 92.4698

97th percentile 4 day average = 63.2240

97th percentile 30 day average = 45.8300

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

39

37

51

33

30

Analysis of the Coffeewood Correctional Center STP - VA0087718
effluent data for Copper

The statistics for Copper are:

Number of values	=	1
Quantification level	=	1
Number < quantification	=	0
Expected value	=	8
Variance	=	23.04
C.V.	=	.6
97th percentile	=	19.46734
Statistics used	=	Reasonable potential assumptions - Type 2 data

The WLAs for Copper are:

Acute WLA	=	11.5
Chronic WLA	=	8
Human Health WLA	=	----

The limits are based on acute toxicity and 1 samples/month.

Maximum daily limit	=	11.5
Average monthly limit	=	11.5

It is recommended that only the maximum daily limit be used.

DATA

8 - *Dissolved DATA*

$$001 \text{ Flow} = 0.200 \text{ MGD}$$

$$0.2 \text{ MGD} \times 11.5 \text{ mg/L} \times 8.345 = 8.7055 = 8.7 \text{ g/d}$$

Analysis of the Coffeewood Correctional Center effluent data for Zinc

The statistics for Zinc are:

Number of values	=	3
Quantification level	=	1.8
Number < quantification	=	0
Expected value	=	130.6667
Variance	=	6146.563
C.V.	=	.6
97th percentile	=	317.9666
Statistics used	=	Reasonable potential assumptions - Type 2 data

The WLAs for Zinc are:

Acute WLA	=	79.1
Chronic WLA	=	71.7
Human Health WLA	=	----

The limits are based on acute toxicity and 1 samples/month.

Maximum daily limit	=	79.10001
Average monthly limit	=	79.10001

It is recommended that only the maximum daily limit be used.

DATA

261
111
20

} DISSOLVED DATA

001 Design Flow = 0.200 MGD

$0.20 \text{ MGD} \times 79.1 \mu\text{g/L} \times 3.785 = 59.8787 = 59.9 \text{ g/d}$

5/29/2008 12:05:45 PM

Facility = Coffeewood Correctional Center Outfall 002

Chemical = Copper

Chronic averaging period = 4

WLAa = 12

WLAc = 8.1

Q.L. = 4

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 20

Expected Value = 1.87360

Variance = 1.26373

C.V. = 0.6

97th percentile daily values = 4.55925

97th percentile 4 day average = 3.11728

97th percentile 30 day average = 2.25966

< Q.L. = 19

Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

77

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

56
480
41
48
76
38
0
0
0
0
0
0
0
0
0
0
0
0
0

**NUTRIENTS AND TOXIC
SUBSTANCES IN
WATER FOR LIVESTOCK
AND POULTRY**

A Report of the
**SUBCOMMITTEE ON NUTRIENT AND
TOXIC ELEMENTS IN WATER**

Committee on Animal Nutrition
Board on Agriculture and Renewable
Resources
Commission on Natural Resources
National Research Council

National Academy of Sciences
WASHINGTON, D.C. 1974

30 Nutrients and Toxic Substances in Water for Livestock and Poultry

not be as available as those in solution to animals drinking the water.

Determinations of the concentration values of most mineral elements in surface waters of the United States during the period 1957-1969 were accumulated in STORET (Systems for Technical Data, 1971). These data include values for the mean, maximum, and minimum concentrations of the nutrient elements (see Table 8). The values obviously include many samples from calcium-magnesium sulfate-chloride and sodium-potassium sulfate-chloride types of water, as well as the more common calcium-magnesium carbonate-bicarbonate types. For this reason, the mean values for sodium, chloride, and sulfate appear somewhat high.

Table 9 gives the estimated average intake of drinking water in liters per day for selected categories of various farm animals. Under the various elements are given three columns of values for illustrative purposes. One column expresses the National Research Council (1966, 1968a,b, 1970a, 1971a,b) daily requirement; the second column gives the approximate mean percentage of that requirement contributed in the water intake each day; and the third column lists the maximum percentage that the daily water intake would supply if the greatest observed concentration of the nutrient were present. No values are presented in Table 9 for percentages of the NRC requirement provided in water when minimum concentrations of nutrients were present, as in nearly all cases they were less than 1 percent.

TABLE 8 Composition of United States Surface Water, 1957-1969 (Collected at 140 Stations)

Substance	Mean	Maximum	Minimum	Number of Determinations
Phosphorus (mg/liter)	0.087	5.0	0.001	1,729
Calcium (mg/liter)	97.1	175.0	11.0	510
Magnesium (mg/liter)	14.3	197.0	8.3	1,143
Sodium (mg/liter)	85.1	7,500.0	0.2	1,801
Potassium (mg/liter)	4.3	370.0	0.06	1,804
Chloride (mg/liter)	478.0	19,000.0	0.0	37,355
Sulfate (mg/liter)	135.9	3,383.0	0.0	30,229
Copper (µg/liter)	12.8	280.0	0.8	1,871
Iron (µg/liter)	43.9	4,600.0	0.10	1,836
Manganese (µg/liter)	29.4	3,230.0	0.20	1,818
Zinc (µg/liter)	51.8	1,183.0	1.0	1,883
Selenium (µg/liter)	0.016	1.0	0.01	234
Iodine ^a (µg/liter)	46.1	336.0	4.0	18
Cobalt ^b (µg/liter)	1.0	5.0	0	720

^aDanzon and Ireland, 1969.

^bDurum et al., 1971.

TABLE 9 Mean and Maximum Percentages of Daily Requirements of Nutrient Elements in the Drinking Water of Livestock and Poultry

Animal	Water Intake ^a (liters/day)	Nutrient Element		
		Req. Daily (%)	Mean (%)	Max. (%)

r). Magnesium salts had calcium chloride decreased (775 mg/liter). Sodium concentrations up to 10,650 mg/liter of sodium, 6,000 mg/liter of magnesium chloride caused growth at level of any salt during served among some rats

stock

In experimental results stock. This variation indicates factors in evaluating the kind, age, and sex of the animal; the intensity of the conditions; type of diet; amount of minerals in the water; and other sources of minerals adapted to the water. It is given in any particular case, but there seems little doubt that the single most reliable method is to test the water for livestock use.

Recommend the use of highly saline water should be given in many cases where circumstances are such that it is readily available, but there seems little doubt that the single most reliable method is to test the water for livestock use.

Water of more than 3,000 mg/liter should be considered. Alkalinity is not from the suitability of the water, but from the carbonates, which in

2. If animals are offered two sources of water, one highly saline and the other not, they will not drink the highly saline water.

3. Animals can consume water of very high salinity for a few days without being harmed if they are then given water of low soluble salt content.

4. As the soluble salts content of water increases, intake usually increases, except for water of extremely high saline content that the animals refuse to drink.

5. Abrupt change from water of low salinity to that of high salinity will probably cause more problems than gradual change.

6. Depressed water intake is very likely to be accompanied by depressed feed intake. Thus, animals being fed for a high rate of gain or

TABLE 10 A Guide to the Use of Saline Waters for Livestock and Poultry

Total Soluble Salts Content of Waters (mg/liter)	Comment
Less than 1,000	These waters have a relatively low level of salinity and should present no serious burden to any class of livestock or poultry.
1,000-2,999	These waters should be satisfactory for all classes of livestock and poultry. They may cause temporary and mild diarrhea in livestock not accustomed to them or watery droppings in poultry (especially at the higher levels), but should not affect their health or performance.
3,000-4,999	These waters should be satisfactory for livestock, although they might very possibly cause temporary diarrhea or be refused at first by animals not accustomed to them. They are poor waters for poultry, often causing watery feces and (at the higher levels of salinity) increased mortality and decreased growth, especially in turkeys.
5,000-6,999	These waters can be used with reasonable safety for dairy and beef cattle, sheep, swine, and horses. It may be well to avoid the use of those approaching the higher levels for pregnant or lactating animals. They are not acceptable waters for poultry, almost always causing some type of problem, especially near the upper limit, where reduced growth and production or increased mortality will probably occur.
7,000-10,000	These waters are unfit for poultry and probably for swine. Considerable risk may exist in using them for pregnant or lactating cows, horses, sheep, the young of these species, or for any animals subjected to heavy heat stress or water loss. In general, their use should be avoided, although older ruminants, horses, and even poultry and swine may subsist on them for long periods of time under conditions of low stress.
More than 10,000	The risks with these highly saline waters are so great that they cannot be recommended for use under any conditions.

at maximum levels. Approximate of iron for beef and dairy an concentrations compared in concentrations. water would provide 1-2 dry cattle and sheep and less strations, 12-51 percent of id 3-6 percent of the require- is present. Copper at average he daily requirements of the icentration 9-33 percent nsumption. At the mean- ent of the daily requirements ould be supplied; at maxi- incase at average concentra- ent of the daily dietary as than 1 percent of those -6 times the requirements hose of swine, and 11 per- concentrations provides irements of beef and dairy levels would supply ap- nts for these species. Due ater in the United States, s purposes. Water in Florida, odine present for meeting

water of livestock and poultry growth, reproduction, lon- products when data were cts of most toxicants on ted, data on various experi- ilable. A number of ele- an, manganese, molybde- ns when in the drinking effects on production or at which these elements various species of animals um were discussed rather s, as well as to their repu- balances in drinking water rm to livestock and poultry. cadmium, are more haz-

ardous to livestock and poultry, especially due to build-up in their tissues and products at levels undesirable to persons that consume them.

Effects of various salts at high concentrations in water were discussed in regard to six species of farm animals. Water that contains less than 1,000 mg/liter of total dissolved salts should present no serious problems to any class of livestock or poultry. Water that contains 1,000-2,999 mg/liter should be satisfactory for all species of livestock and poultry in regard to performance, though some mild and temporary diarrhea may occur. When the water contains 3,000-4,999 mg/liter, it is of poor quality for poultry and at the higher levels may cause increased mortality and decreased growth. However, livestock should find this range of salinity satisfactory, especially when they become accustomed to it. Water in the range of 5,000-6,999 mg/liter can be used with reasonable safety for beef and dairy cattle, sheep, swine, and horses, although it is best to avoid higher levels for pregnant and lactating animals. Salinity in this range is not acceptable to poultry. In the range of 7,000-10,000 mg/liter of saline salts, the waters are unfit for poultry and probably for swine. They are a source of risk for pregnant and lactating cows, sheep, and horses, as well as for the young of these species and those subjected to heat stress. Waters that contain more than 10,000 mg/liter of saline salts involve sufficient risk that they probably should not be used.

Toxic blue-green algae were pointed out as a worldwide problem in drinking water for livestock. To date only one toxin has been reported as isolated and identified. It is a cyclic polypeptide containing 10 amino acid residues, one of which is the unnatural amino acid D-serine. The sudden decomposition of algal blooms often precedes mass mortality of fish and these decompositions have been associated with livestock poisonings. Predileth symptoms due to algal poison have not been well observed and postmortem examination is apparently of no help in diagnosis. In view of the many unknowns relating to toxic algae blooms, the use of drinking water with heavy growths should best be avoided.

Radionuclides occur in water from both natural and human sources. In general, the radioactivity of drinking water for livestock and poultry should be of no greater level than that recommended for human consumption by the U.S. Public Health Service.

Limited information on the effects of pesticides in water on economic animals and their products was presented and their potential hazards pointed out. Recommendations are given in Table 13 on limits of concentration of some potential toxic substances in drinking water for livestock and poultry.

REGIONAL MODELING SYSTEM

VERSION 3.2

DATA FILE SUMMARY

THE NAME OF THE DATA FILE IS: MSDIV.MOD

THE STREAM NAME IS: Cabin Branch
THE RIVER BASIN IS: Rappahannock River
THE SECTION NUMBER IS: 4
THE CLASSIFICATION IS: III

STANDARDS VIOLATED (Y/N) = N

STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Medium Security Dormitory IV

PROPOSED LIMITS ARE:

FLOW = .2 MGD
BOD5 = 10 MG/L
TKN = 6 MG/L
D.O. = 6 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 3

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON

THE GAUGE NAME IS: Cedar Run near Culpeper (#01667650)

GAUGE DRAINAGE AREA = 33.2 SQ.MI.

GAUGE 7Q10 = 0 MGD

DRAINAGE AREA AT DISCHARGE = 4.54 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = ~~Y~~N

ANTI-DEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 25 °C

There is a small sewage discharge (500 gpd) approximately 1500 feet upstream of the discharge. This is < 0.5% of the flow volume of the proposed discharge and was not considered further. A minor industrial discharge also enters Cabin Branch upstream but does not contribute significant BOD and TKN loads.

Anti-degradation does not apply to the first two stream segments modeled since the 7Q10 is zero. Anti-degradation does apply to the last segment, the Rapidan River. Water quality standards are applicable within each stream segment modeled.

SEGMENT INFORMATION

SEGMENT # 1 ##### CABIN BRANCH

SEGMENT ENDS BECAUSE: A TRIBUTARY ENTERS AT END

SEGMENT LENGTH = 1.8 MI

SEGMENT WIDTH = 2.5 FT

SEGMENT DEPTH = .5 FT

SEGMENT VELOCITY = .2 FT/SEC

DRAINAGE AREA AT SEGMENT START = 4.54 SQ.MI.

DRAINAGE AREA AT SEGMENT END = 5.76 SQ.MI.

ELEVATION AT UPSTREAM END = 300 FT

ELEVATION AT DOWNSTREAM END = 280 FT

THE CROSS SECTION IS: RECTANGULAR

THE CHANNEL IS: MOSTLY STRAIGHT

POOLS AND RIFFLES (Y/N) = Y

THE SEGMENT LENGTH IS 10 % POOLS

POOL DEPTH = 1 FT

THE SEGMENT LENGTH IS 90 % RIFFLES

RIFFLE DEPTH = .4 FT

THE BOTTOM TYPE = SMALL ROCK

SLUDGE DEPOSITS = NONE

AQUATIC PLANTS = LIGHT

ALGAE OBSERVED = NONE

WATER COLORED GREEN (Y/N) = N

TRIBUTARY DATA

FLOW = 0 MGD

BOD5 = 2 MG/L

TKN = 0 MG/L

D.O. = 7.4255 MG/L

(≤ 1000 gpd)

Another small sewage plant discharges into Cedar Run above the confluence with Cabin Branch, however it is > 1 mile upstream of the confluence and is not expected to contribute significant flow or pollutant load in the section of Cedar Run below Cabin Branch.

SEGMENT INFORMATION

SEGMENT # 2 ##### CEDAR RUN

SEGMENT ENDS BECAUSE: A TRIBUTARY ENTERS AT END

SEGMENT LENGTH = 2.1 MI

SEGMENT WIDTH = 4 FT

SEGMENT DEPTH = .3 FT

SEGMENT VELOCITY = .3 FT/SEC

DRAINAGE AREA AT SEGMENT START = 25.76 SQ.MI.

DRAINAGE AREA AT SEGMENT END = 28.16 SQ.MI.

ELEVATION AT UPSTREAM END = 280 FT

ELEVATION AT DOWNSTREAM END = 240 FT

THE CROSS SECTION IS: RECTANGULAR

THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = Y

THE SEGMENT LENGTH IS 10 % POOLS

POOL DEPTH = 1 FT

THE SEGMENT LENGTH IS 90 % RIFFLES

RIFFLE DEPTH = .2 FT

THE BOTTOM TYPE = SMALL ROCK

SLUDGE DEPOSITS = NONE

AQUATIC PLANTS = FEW

ALGAE OBSERVED = VISIBLE ONLY ON EDGES

WATER COLORED GREEN (Y/N) = N

TRIBUTARY DATA

FLOW = 12.9 MSD

BOD5 = 2 MG/L

TKN = 0 MG/L

D.O. = 7.4334 MG/L

SEGMENT INFORMATION

SEGMENT # 3 ##### RAPIDAN RIVER

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 3 MI

SEGMENT WIDTH = 75 FT

SEGMENT DEPTH = .8 FT

SEGMENT VELOCITY = .4 FT/SEC

DRAINAGE AREA AT SEGMENT START = 500 SQ.MI.

DRAINAGE AREA AT SEGMENT END = 507 SQ.MI.

ELEVATION AT UPSTREAM END = 240 FT

ELEVATION AT DOWNSTREAM END = 235 FT

THE CROSS SECTION IS: RECTANGULAR

THE CHANNEL IS: MOSTLY STRAIGHT

POOLS AND RIFFLES (Y/N) = N

THE BOTTOM TYPE = SILT

SLUDGE DEPOSITS = NONE

AQUATIC PLANTS = NONE

ALGAE OBSERVED = NONE

WATER COLORED GREEN (Y/N) = N

REGIONAL MODELING SYSTEM Ver 3.2 (QWRM - 9/90)

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*****: **i /*****

REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Medium Security Dormitory IV DISCHARGE

TO Cabin Branch

THE SIMULATION STARTS AT THE Medium Security Dormitory IV DISCHARGE

***** PROPOSED PERMIT LIMITS *****

FLOW = .2 MGD cBOD5 = 10 Mg/L TKN = 6 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 3 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

***** BACKGROUND CONDITIONS *****

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD

THE DISSOLVED OXYGEN OF THE STREAM IS 7.425 Mg/L

THE BACKGROUND cBOD_u OF THE STREAM IS 5 Mg/L

THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

***** MODEL PARAMETERS *****

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	1.80	0.223	6.667	0.700	0.250	0.000	290.00	25.00	8.251
2	2.10	0.290	11.429	1.200	0.450	0.000	260.00	25.00	8.259
3	3.00	0.360	1.000	0.900	0.250	0.000	237.50	25.00	8.266

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

TOTAL STREAMFLOW = 0.2000 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD _u (Mg/L)	nBOD _u (Mg/L)
0.000	0.000	6.000	25.000	12.990
0.100	0.100	5.762	24.403	12.860
0.200	0.200	5.582	23.820	12.731
0.300	0.300	5.450	23.251	12.603
0.400	0.400	5.355	22.695	12.476
0.500	0.500	5.292	22.153	12.351
0.600	0.600	5.253	21.624	12.227
0.700	0.700	5.233	21.107	12.104
0.800	0.800	5.230	20.603	11.983
0.900	0.900	5.239	20.110	11.863
1.000	1.000	5.259	19.630	11.743
1.100	1.100	5.286	19.161	11.626
1.200	1.200	5.319	18.703	11.509
1.300	1.300	5.357	18.256	11.393
1.400	1.400	5.399	17.820	11.279
1.500	1.500	5.443	17.394	11.166
1.600	1.600	5.489	16.979	11.054
1.700	1.700	5.537	16.573	10.943
1.800	1.800	5.585	16.177	10.833

FOR THE TRIBUTARY AT THE END OF SEGMENT 1

FLOW = 0 MGD cBOD₅ = 2 Mg/L TKN = 0 Mg/L D.O. = 7.4255 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0000 MGD

TOTAL STREAMFLOW = 0.2000 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	CBODu (Mg/L)	nBODu (Mg/L)
0.000	1.800	5.585	16.177	10.833
0.100	1.900	5.646	15.671	10.683
0.200	2.000	5.707	15.180	10.536
0.300	2.100	5.770	14.705	10.390
0.400	2.200	5.832	14.245	10.246
0.500	2.300	5.894	13.799	10.104
0.600	2.400	5.955	13.367	9.965
0.700	2.500	6.015	12.949	9.827
0.800	2.600	6.074	12.543	9.691
0.900	2.700	6.132	12.151	9.557
1.000	2.800	6.188	11.771	9.425
1.100	2.900	6.243	11.402	9.295
1.200	3.000	6.297	11.045	9.166
1.300	3.100	6.349	10.700	9.039
1.400	3.200	6.400	10.365	8.914
1.500	3.300	6.450	10.040	8.791
1.600	3.400	6.498	9.726	8.669
1.700	3.500	6.544	9.422	8.550
1.800	3.600	6.590	9.127	8.431
1.900	3.700	6.634	8.841	8.315
2.000	3.800	6.677	8.564	8.200
2.100	3.900	6.719	8.297	8.086

FOR THE TRIBUTARY AT THE END OF SEGMENT 2

FLOW = 12.9 MGD CBOD5 = 2 Mg/L TKN = 0 Mg/L D.O. = 7.4334 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0000 MGD

TOTAL STREAMFLOW = 13.1000 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	3.900	7.423	5.050	0.123
0.100	4.000	7.343	5.000	0.123
0.200	4.100	7.359	5.000	0.122
0.300	4.200	7.376	5.000	0.121
0.400	4.300	7.392	5.000	0.120
0.500	4.400	7.407	5.000	0.120
0.600	4.500	7.423	5.000	0.119
0.700	4.600	7.438	5.000	0.118
0.800	4.700	7.439	5.000	0.117
0.900	4.800	7.439	5.000	0.117
1.000	4.900	7.439	5.000	0.116
1.100	5.000	7.439	5.000	0.115
1.200	5.100	7.439	5.000	0.115
1.300	5.200	7.439	5.000	0.114
1.400	5.300	7.439	5.000	0.113
1.500	5.400	7.439	5.000	0.113
1.600	5.500	7.439	5.000	0.112
1.700	5.600	7.439	5.000	0.111
1.800	5.700	7.439	5.000	0.111
1.900	5.800	7.439	5.000	0.110
2.000	5.900	7.439	5.000	0.109
2.100	6.000	7.439	5.000	0.108
2.200	6.100	7.439	5.000	0.108
2.300	6.200	7.439	5.000	0.107
2.400	6.300	7.439	5.000	0.106
2.500	6.400	7.439	5.000	0.106
2.600	6.500	7.439	5.000	0.105
2.700	6.600	7.439	5.000	0.104
2.800	6.700	7.439	5.000	0.104
2.900	6.800	7.439	5.000	0.103
3.000	6.900	7.439	5.000	0.102

$$\Delta DO = 0.096 \text{ mg/l}$$

$$< 0.20 \text{ mg/l}$$

Antidegradation
is met.

REGIONAL MODELING SYSTEM Ver 3.2 (QWRM - 9/90)
09-16-1992 16:15:49

DATA FILE = MSDIV.MOD

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2	Spreadsheet for determination of WET test endpoints or WET limits														
3															
4	Excel 97						Acute Endpoint/Permit Limit			Use as LC ₅₀ in Special Condition, as TUA on DMR					
5	Revision Date: 01/10/05														
6	File: WETLIM10.xls						ACUTE 100% = NOAEC			LC ₅₀ = NA % Use as NA TUA					
7	(MIX.EXE required also)														
8				ACUTE WLA _a			0.3			Note: Inform the permittee that if the mean of the data exceeds this TUA: 1.0 a limit may result using WLA.EXE					
9															
10															
11							Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUC on DMR					
12															
13				CHRONIC			1.462574684 TUC			NOEC = 69 % Use as 1.44 TUC					
14				BOTH*			3.000000074 TUC			NOEC = 34 % Use as 2.94 TUC					
15	Enter data in the cells with blue type:			AML			1.462574684 TUC			NOEC = 69 % Use as 1.44 TUC					
16															
17	Entry Date: 06/04/08						ACUTE WLA _{a,c}			3			Note: Inform the permittee that if the mean of the data exceeds this TUC: 1.0		
18	Facility Name: Coffeewood Correctional						CHRONIC WLA _c			1					
19	VPDES Number: VA0087718														
20	Outfall Number: 2														
21															
22	Plant Flow: 0.07 MGD														
23	Acute 1Q10: 0 MGD						100 %								
24	Chronic 7Q10: 0 MGD						100 %								
25															
26	Are data available to calculate CV? (Y/N)			N			(Minimum of 10 data points, same species, needed)						Go to Page 2		
27	Are data available to calculate ACR? (Y/N)			N			(NOEC<LC50, do not use greater/less than data)						Go to Page 3		
28															
29															
30	IWC _a			100 %			Plant flow/plant flow + 1Q10			NOTE: If the IWC _a is >33%, specify the NOAEC = 100% test/endpoint for use					
31	IWC _c			100 %			Plant flow/plant flow + 7Q10								
32															
33	Dilution, acute			1			100/IWC _a								
34	Dilution, chronic			1			100/IWC _c								
35															
36	WLA _a			0.3			Instream criterion (0.3 TUA) X's Dilution, acute								
37	WLA _c			1			Instream criterion (1.0 TUC) X's Dilution, chronic								
38	WLA _{a,c}			3			ACR X's WLA _a - converts acute WLA to chronic units								
39															
40	ACR -acute/chronic ratio			10			LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
41	CV-Coefficient of variation			0.6			Default of 0.6 - if data are available, use tables Page 2)								
42	Constants eA			0.4109447			Default = 0.41								
43	eB			0.6010373			Default = 0.60								
44	eC			2.4334175			Default = 2.43								
45	eD			2.4334175			Default = 2.43 (1 samp)			No. of samples: 1					
46															
47	LTA _{a,c}			1.2328341			WLA _{a,c} X's eA								
48	LTA _c			0.6010373			WLA _c X's eB								
49	MDL** with LTA _{a,c}			3.000000074			TUC NOEC = 33.333333 (Protects from acute/chronic toxicity)			Rounded NOEC's %					
50	MDL** with LTA _c			1.462574684			TUC NOEC = 68.372577 (Protects from chronic toxicity)			NOEC = 34 %					
51	AML with lowest LTA			1.462574684			TUC NOEC = 68.372577 Lowest LTA X's eD			NOEC = 69 %					
52															
53	IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TUC TO TUA														
54															
55	MDL with LTA _{a,c}			0.300000007			TUA LC50 = 333.333325 %			Use NOAEC=100%			Rounded LC50's %		
56	MDL with LTA _c			0.146257468			TUA LC50 = 683.725769 %			Use NOAEC=100%			LC50 = NA %		
57															
58															

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
59															
60		Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)													
61															
62		IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.					Vertebrate				Invertebrate				
63							IC ₂₅ Data				IC ₂₅ Data				
64							or				or				
65							LC ₅₀ Data		LN of data		LC ₅₀ Data		LN of data		
66							*****				*****				
67							1		0		1		0		
68							2				2				
69							3				3				
70							4				4				
71							5				5				
72		6				6									
73		7				7									
74		Coefficient of Variation for effluent tests		8		8									
75				9		9									
76		CV =		0.6 (Default 0.6)		10		10							
77						11		11							
78		σ ² =		0.3074847		12		12							
79		σ =		0.554513029		13		13							
80						14		14							
81		Using the log variance to develop eA		15		15									
82		(P. 100, step 2a of TSD)		16		16									
83		Z = 1.881 (97% probability stat from table)		17		17									
84		A =		-0.88929666		18		18							
85		eA =		0.410944686		19		19							
86						20		20							
87		Using the log variance to develop eB													
88		(P. 100, step 2b of TSD)		St Dev		NEED DATA		NEED DATA							
89		σ ₄ ² =		0.086177696		Mean		0							
90		σ ₄ =		0.293560379		Variance		0							
91		B =		-0.50909823		CV		0							
92		eB =		0.601037335											
93															
94		Using the log variance to develop eC													
95		(P. 100, step 4a of TSD)													
96															
97		σ ² =		0.3074847											
98		σ =		0.554513029											
99		C =		0.889296658											
100		eC =		2.433417525											
101															
102		Using the log variance to develop eD													
103		(P. 100, step 4b of TSD)													
104		n =		1				This number will most likely stay as "1", for 1 sample/month.							
105		σ _n ² =		0.3074847											
106		σ _n =		0.554513029											
107		D =		0.889296658											
108		eD =		2.433417525											
109															

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
110															
111	Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)														
112															
113	To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results,														
114	acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute														
115	LC ₅₀ , since the ACR divides the LC ₅₀ by the NOEC. LC ₅₀ 's >100% should not be used.														
116															
117	Table 1. ACR using Vertebrate data														
118															
119															
120	Set #	LC₅₀	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use							
121	1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
122	2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
123	3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
124	4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
125	5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
126	6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
127	7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
128	8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
129	9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
130	10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
131															
132	ACR for vertebrate data: 0														
133															
134	Table 1. Result: Vertebrate ACR 0														
135	Table 2. Result: Invertebrate ACR 0														
136	Lowest ACR Default to 10														
137															
138	Table 2. ACR using Invertebrate data														
139															
140															
141	Set #	LC₅₀	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use							
142	1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
143	2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
144	3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
145	4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
146	5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
147	6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
148	7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
149	8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
150	9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
151	10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA							
152															
153	ACR for vertebrate data: 0														
154															
155															
156															
157	DILUTION SERIES TO RECOMMEND														
158	Table 4.														
159															
160															
161															
162															
163															
164															
165															
166															
167															
168															
169															
170															
171															
172															

Convert LC₅₀'s and NOEC's to Chronic TU's
for use in WLA.EXE
ACR used: 10

	Enter LC ₅₀	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50,
enter it here: NO DATA %LC₅₀
NO DATA TUa

Cell: I9

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22

Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40

Comment: If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41

Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48

Comment: See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62

Comment: Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62

Comment: Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117

Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119

Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121

Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: $100/\text{NOEC} = \text{TUc}$ or $100/\text{LC50} = \text{TUa}$.

Cell: C138

Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

Citizens may comment on the proposed reissuance of a permit that allows the release of treated wastewater into a water body in Culpeper County, Virginia

PUBLIC COMMENT PERIOD: *TBD*, 2008 to 5:00 p.m. on *TBD*, 2008

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater and Industrial
Owners or operators of municipal and industrial facilities that discharge or propose to discharge wastewater into the streams, rivers or bays of Virginia from a point source must apply for this permit. In general, point sources are fixed sources of pollution such as pipes, ditches or channels. The applicant must submit the application to the Department of Environmental Quality, under the authority of the State Water Control Board.

PURPOSE OF NOTICE: To invite the public to comment on the draft permit.

NAME, ADDRESS AND PERMIT NUMBER OF APPLICANT: Virginia Department of Corrections
12352 Coffeewood Drive, Mitchels, VA 22709
VA0087718

NAME AND ADDRESS OF FACILITY: Coffeewood Correctional Center
12352 Coffeewood Drive, Mitchels, VA 22709

Project description: The Virginia Department of Corrections has applied for a reissuance of a permit for Coffeewood Correctional Center in Culpeper County, Virginia. The applicant proposes to release treated sewage and industrial wastewater at a rate of 0.2 Million Gallons per Day and 0.07 Million Gallons per Day, respectively, into the Cabin Branch in Culpeper County that is in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The sludge will be disposed of in a landfill. The permit will limit the following pollutants to amounts that protect water quality: pH, cBOD, TSS, TDS, DO, TKN, Copper, Zinc, *E. coli* and Whole Effluent Toxicity.

How a decision is made: After public comments have been considered and addressed by the permit or other means, DEQ will make the final decision unless there is a public hearing. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the proposed permit. If there is a public hearing, the State Water Control Board will make the final decision.

HOW TO COMMENT: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public hearing.

WRITTEN COMMENTS MUST INCLUDE:

1. The names, mailing addresses and telephone numbers of the person commenting and of all people represented by the citizen.
2. If a public hearing is requested, the reason for holding a hearing, including associated concerns.
3. A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen.

TO REVIEW THE DRAFT PERMIT AND APPLICATION: The public may review the documents at the DEQ-Northern Regional Office every work day by appointment.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:

Name: Douglas Frasier

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3873 E-mail: ddfrasier@deq.virginia.gov Fax: (703) 583-3841



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Northern Virginia Regional Office
13901 Crown Court
Woodbridge, VA 22193-1453
(703) 583-3800 fax (703) 583-3801
www.deq.state.va.us

Robert G. Burnley
Director

Gregory L. Clayton
Regional Director

AMENDMENT TO EXECUTIVE COMPLIANCE AGREEMENT

DEPARTMENT OF CORRECTIONS COFFEEWOOD CORRECTIONAL CENTER

For COFFEEWOOD WATER & SEWAGE TREATMENT PLANT (VPDES Permit No. VA0087718)

This is an amendment to the Executive Compliance Agreement ("Agreement") entered into under the authority of Va. Code § 62.1-14 and 10.1-1185 by the Department of Environmental Quality ("DEQ") and the Department of Corrections, ("DOC") Coffeewood Correctional Center ("Coffeewood") on February 2, 2001, regarding the Coffeewood water treatment and sewage treatment plant for the purpose of revising certain provisions of the Agreement.

The Agreement provides a construction schedule for Coffeewood to combine discharges from water treatment outfall 002 and sewage treatment outfall 001 into one outfall and to locate that outfall on the Rapidan River where the River's flow provides sufficient dilution for the discharge to meet the Permit's whole effluent toxicity limit ("WET") and effluent limits for copper and zinc. The construction schedule requires that Coffeewood complete construction of the new outfall by August 31, 2002 but completion is contingent upon Coffeewood acquiring the necessary easements to gain access to the Rapidan River.


In a letter dated October 15, 2001, Coffeewood explained that the DOC is unable to acquire the necessary easements. In follow-up correspondence dated March 22, 2002, Coffeewood requested that the Agreement be amended to extend the construction schedule so that Coffeewood could develop and implement an alternative plan and schedule for achieving compliance with final Permit effluent limits.

To remedy these matters, the Department of Corrections, Coffeewood Correctional

DOC Coffeewood Correctional Center
Amended Executive Compliance Agreement
Page 2

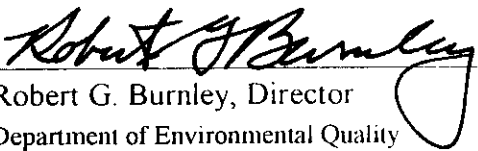
Center and DEQ agree to the amended schedule of action in Appendix A and to Coffeewood's compliance with the interim limits provided in Appendices B and C. Both DEQ and Coffeewood understand and agree that this amended Agreement does not alter, modify, or amend any other provisions of the Agreement and the unmodified provisions of the Agreement remain in effect by their own terms.

This amended Agreement shall become effective upon the date of its execution by the Director of the Department of Environmental Quality or his designee. The Department of Corrections, Coffeewood Correctional Center agrees to be bound by any compliance dates in this amended Agreement which may predate its effective date.



Ron Angelone, Director
Department of Corrections

5-31-02
Date



Robert G. Burnley, Director
Department of Environmental Quality

19 June 02
Date

**APPENDIX A
SCHEDULE OF COMPLIANCE**

The Department of Corrections, Coffeewood Correctional Center shall:

1. By July 1, 2002, submit for review a preliminary engineering report ("PER") to the DEQ Northern Virginia Regional Office ("NVRO") and to the Virginia Department of Health ("VDH") addressing alternatives for achieving compliance with final Permit effluent limits and recommending a preferred alternative; and
2. By November 1, 2002, submit to DEQ NVRO for review and approval a plan and schedule for implementing the alternative chosen by Coffeewood for achieving compliance with final Permit effluent limits. If the cost of the alternative chosen by Coffeewood exceeds the amount budgeted for the project, the schedule submitted pursuant to item two may provide for time needed to request additional funding from the Virginia General Assembly. Upon approval, the plan and schedule shall become a part of and enforceable under this Agreement.

APPENDIX C

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

COFFEEWOOD WATER & WASTEWATER PLANT

During
ECA,
These
shall b

During the period beginning with the effective date of this amended ECA and lasting until Coffeewood complies with the items in Appendix A of this amended ECA, Coffeewood shall monitor and limit the discharge from outfall 002 in accordance with the VPDES Permit No. VA0087718, except as specified below. These interim limits shall retroactively apply, if applicable, as of the first day of the month in which this amended ECA becomes effective. These requirements shall be construed in light of the Board's Permit Regulation.

PAR#	PARAMETER	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS			
		<u>Monthly Average</u>		<u>Weekly Average</u>		<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Tot. R	Chronic Whole Effluent Toxicity Limit (Tuc)	NA	NA	NA	NA	N/A	N/L	1/yr	5G/8 HC
Tot. R									
N/A	N/A = Not Applicable	N/L = No Limit							
1/6M	1/yr = Once per year								
	5G/8 = An eight hour composite sample consisting of a minimum of five grab samples collected at hourly intervals until the discharge ceases or if the discharge is less than eight hours in duration, a minimum of five grab samples taken at evenly spaced intervals during the duration of the discharge.								
	HC								

Tot. R
Tot. R

N/A
1/6M

APPENDIX B

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

COFFEEWOOD WATER & WASTEWATER PLANT

During the period beginning with the effective date of this amended ECA and lasting until Coffeewood complies with the items in Appendix A of this amended ECA, Coffeewood shall monitor and limit the discharge from outfall 001 in accordance with the VPDES Permit No. VA0087718, except as specified below. These interim limits shall retroactively apply, if applicable, as of the first day of the month in which this amended ECA becomes effective. These requirements shall be construed in light of the Board's Permit Regulation.

PARAMETER	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS			
	<u>Monthly Average</u>		<u>Weekly Average</u>		<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Tot. Recov.Copper (µg/l & g/d)	NL	NL	NA	NA	N/A	N/L	1/6M	Grab
Tot. Recov. Zinc (µg/l & g/d)	NL	NL	NA	NA	N/A	N/L	1/6M	Grab

N/A = Not Applicable

N/L = No Limit

1/6M = Once per six months

The permittee shall select an analysis level for total recoverable copper and zinc with a quantification level (QL) less than the Site Specific Target Value listed in Appendix A.

Revised 2/2003

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Coffeewood Correctional Center
NPDES Permit Number:	VA0087718
Permit Writer Name:	Douglas Frasier
Date:	6 June 2008

Major [X]

Minor []

Industrial [X]

Municipal []

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?	X		
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	X		
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?	X		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			X
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?		X	
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?		X	

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals (To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?		X	
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			X
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?	X		
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a “reasonable measure of ACTUAL production” for the facility (not design)?			X
5. Does the permit contain “tiered” limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			X

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?			X
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

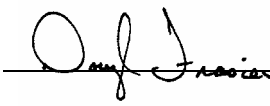
II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?		X	
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State’s standard practices?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?		X	
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			X
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?		X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Douglas Frasier</u>
Title	<u>Environmental Specialist II</u>
Signature	<u></u>
Date	<u>6 June 2008</u>